Claims 5, 6, and 7 have been amended to delete the preferred limitations. New claims 22-26 have been added to the application to recite the preferred limitations deleted by the amendments to claims 5, 6, and 7. Claim 11 has been amended to provide preferred spelling. Claim 15 has been amended to delete the "such as" terminology.

The claims as amended are believed to be defdinite under the second paragraph of 35 U.S.C. § 112. Removal of the 35 U.S.C. § 112, second paragraph, ground of rejection is believed to be in order and is respectfully solicited.

Prior to discussing the 35 U.S.C. § 103(a) grounds of rejection, it is noted that a restriction requirement is made on page 3 of the action. It is also stated on page 3 that during a telephone conversation with "Mr. Keiko Tanaka Kubovcik on January 14, 2002 a provisional election was made" of claims 1-20. The office of the undersigned, however, has no record of a telephone restriction requirement or election in this application. There is nothing in the file of the application concerning a restriction requirement. The undersigned does not make elections without client authorization and there is no correspondence with the client

concerning a restriction requirement. The time records of the undersigned also do not show any time recorded on or around January 14, 2002, that relates to this application. Additionally, there is no Mr. Keiko Tanaka Kubovcik in the office of the undersugned and Ms. Keiko Tanaka Kubovcik does not handle restriction requirements. Furthermore, a restriction requirement is not proper in this application because it is the national stage in the U.S. of an international application. Only a lack of unity of invention requirement can be made. The undersigned would not have responded to a restriction requirement.

For the above reasons, there is no prior election to be affirmed. However, in response to the restriction requirement stated in the action, applicant elects the subject matter of claims 1-20. The election is made with traverse as being improper since, as noted above, a restriction requirement is not proper in this application because it is the national stage in the U.S. of an international application. Notwithstanding this traversal, applicant will withdraw the traversal upon a finding of allowability of the elected subject matter.

Referring to the 35 U.S.C. § 103(a) grounds of rejection, the method according to the present invention for producing a modified fibrous product is characterized in that:

- a fibrous suspension of a cellulosic material is admixed at alkaline conditions - before feeding to a paper machine - with an alkyl derivative of cellulose, which is soluble in water at mainly alkaline conditions and which is at least partially dissolved in water, and
- the derivative is allowed to attach to the fibrous raw-material before the drying of the fibrous material so that the attached cellulosic derivative cannot be removed by washing.

Nothing of this kind is disclosed in the references cited in the rejections in the action.

U.S. Patent No. 6,165,320 ("Bates") relates to the surface sizing of paper. The sizing composition contains CMC. According to the reference, the sizing composition is applied at alkaline conditions (column 5, lines 39 to 44). However, there is no disclosure or suggestion of the use of CMC products which would be water soluble at alkaline conditions and of mixing of the CMC

products with a fiber suspension of a cellulosic material before introducing the fiber suspension to a paper machine and no disclosure or suggestion of allowing the CMC products to be bonded to the fibrous material in the suspension such that the products cannot be washed off with water. The same deficiencies apply to the method disclosed in U.S. Patent No. 5,637,193 (Hassi).

The Rha reference (U.S. Patent No. 5,354,424), taken alone or with Bates and/or Hassi, is also insufficient to support a *prima facie* case of obviousness of the method recited in the claims of the present application. Rha discloses a method of coating paper with water soluble or water dispersable oligomers having a relatively low molecular weight. The oligomers are obtained by degrading polysaccharide derivatives, in particular, starch and cellulose derivatives. The polymers can be degraded, e.g., enzymatically (cf. column 2, line 57, to column 3, line 34).

In the method of Rha, paper is dipped into a treatment liquid containing the oligomers or the treatment liquid can be added to a fibrous suspension (column 6, lines 12 to 64).

Rha corresponds, therefore, to the state of the art presented in the preamble of claim 1. Thus, in the method of Rha, just as in

the preamble, the fibrous suspension is mixed with a component which modifies the properties of the fibers. In Rha, the component is an alkyl derivative. However, there are at least three differences between the method of the present invention and the prior art as represented by Rha:

First, in the Rha reference, the alkyl derivative used is not water soluble "mainly in alkaline conditions". For CMC to be water soluble mainly in alkaline conditions, the DS (degree of substitution) must be below 0.5 and the DP (degree of polymerization) must be in the range of 100-5000 and, preferably, in the range of 600 to 5,000. Both of these prerequisites must be in force simultaneously.

In the Rha reference no attention is paid to the degree of substitution of the CMC. The DS of the degraded polymer derivative should, according to Rha, be 0.1 to 3.0 (column 4, lines 39 to 41). I.e., the DS can have any value. It is also essential in Rha that, by means of the degradation procedure, an oligomer mixture is provided having a low polymerization degree (DP of about 3 to 500, preferably 3 to 300, in particular 5 to 50). (See, column 2, lines 57 to 63; and column 5, lines 52 to 58). (The claims of Rha are

restricted to 5 to 50). As a result of these low DP values, the derivatives are water-soluble.

Second, Rha does not indicate at which pH the derivative is to be added to the stock. According to the present invention the cellulosic derivative is mixed at alkaline conditions with the fibrous stock. This comprises, e.g., that the derivative is dissolved in an alkaline aqueous solution at a desired point of time and that the derivative is attached to the fibers from that solution.

Third, as a result of the above differences, the short contacting times (5 and 10 minutes, respectively) are not sufficient to attach the cellulosic derivative to the fibers such that it cannot be removed by washing. Since the derivatives are water-soluble they are also easily washed away from the fibers. The method of the present invention uses generally longer contacting times, but even in the case when the contacting time is in the same range of 5 to 10 minutes, the bonding is more complete because the derivatives are alkali soluble.

Rha discloses that the properties of water-removal of the treated pulps and the mechanical properties of the pulp product are

improved. This is also the case for the present invention, however, with the difference that the improvement can be obtained with a much smaller amount of cellulosic derivative. In the method of Rha, a 10% CMC solution is used (Example 5) or slightly more than 5% of the fibers (Example 7), whereas the amounts used in the present invention are smaller (1% of the fibers in Example 1).

In spite of the smaller amounts used, the results in the present invention are clearly better than those presented in Rha (according to Table 8 of Rha, the WRW value improves from 5 g to 5.3 g; for the present invention the WRW value becomes multifold in comparison to Rha (cf. Figure 2). The same conclusions can also be drawn regarding the strength properties (cf. Table 4 in the present application)).

In summary, the present invention is based on the new concept of binding to the cellulosic fibers a cellulose derivative which is alkali soluble, the bonding being carried out at conditions in which the derivative is so well bound that it cannot be washed away. The derivatives are attached to the surface of the fibers and even small amounts are sufficient to modify the properties of the fibers. Derivatives of small molecular size such as those used

in Rha are water soluble and, as a result they are easily washed away. Obviously, they also readily penetrate the cell wall of the fibers which increases the consumption of the derivative.

For the above reasons, the cited references, taken alone or in any combination, are insufficient to support a case of *prima facie* obviousness of the claimed method under 35 U.S.C. § 103(a). Removal of the 35 U.S.C. § 103(a) rejections is in order and is respectfully solicited.

The foregoing is believed to be a complete and proper response to the Office Action dated January 16, 2002, and is believed to place this application in condition for allowance. If, however, minor issues remain that can be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number indicated below.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attachment is captioned **"VERSION WITH MARKINGS TO SHOW CHANGES MADE."**

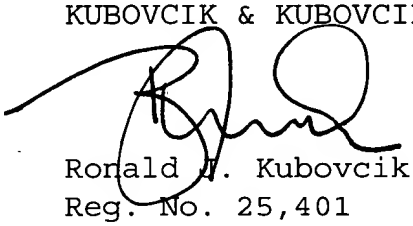
In the event that this paper is not considered to be timely filed, applicant hereby petitions for an appropriate extension of

time. The fee for any such extension may be charged to our Deposit Account No. 111833.

In the event any additional fees are required, please also charge our Deposit Account No. 111833.

Respectfully submitted,

KUBOVCIK & KUBOVCIK



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 1, 5, 6, 7, 11 and 15 have been amended as follows:

1. **(Amended)** A method of producing a modified fiber product, according to which method

- cellulosic raw material is formed into a fiber suspension,
- components modifying the properties of fibers are added to the fiber suspension and
- the fiber material is dried,

characterized in that

- an alkyl derivative of cellulose, which is water-soluble in mainly alkaline conditions, is mixed into the fiber suspension in alkaline conditions **before introducing the fiber suspension to the paper machine**, the derivative being at least partly dissolved in water, and
- the derivative is allowed to be bonded to the fibrous raw material prior to drying the fibrous material so that the

bonded cellulose derivative can not be washed off with water.

5. **(Twice Amended)** A method according to claim 1, characterized in that the alkyl derivative of cellulose is allowed to be sorbed to the cellulose from the water phase so that at least 10%[~~, preferably 20%, and especially preferably at least 30%~~] of the derivative contained by the water phase is allowed to be sorbed to the cellulose.

6. **(Twice Amended)** A method according to claim 1, characterized in that the pH value of the pulp is more than 8[~~, preferably more than 10~~].

7. **(Twice Amended)** A method according to claim 1, characterized in that the pulp is mixed with the cellulose derivative for at least 5 minutes[~~, preferably at least 10 minutes and especially preferably for at least 20 minutes~~] before drying.

11. **(Twice Amended)** A method according to claim 1, characterized in that the cellulose derivative to be sorbed is [~~hydroxy-prophyl-methyl-cellulose~~] **hydroxy-propyl-methyl cellulose** (HPMC), hydroxy-ethyl-methyl cellulose (HEMC) and [hydroxy-buthyl-methyl cellulose] **hydroxy-butyl-methyl cellulose** (HBMC).

15. **(Twice Amended)** A method according to claim 14, characterized in that the cellulose derivative is contacted with the cellulose fibers in an alkaline bleaching stage[~~, such as an oxygen (O) or peroxide (P) stage~~].

The following new claims, claims 22-26, have been added to the application:

22. **(New)** A method according to claim 1, characterized in that the alkyl derivative of cellulose is allowed to be sorbed to the cellulose from the water phase so that at least 20% of the derivative contained by the water phase is allowed to be sorbed to the cellulose.

23. **(New)** A method according to claim 1, characterized in that the alkyl derivative of cellulose is allowed to be sorbed to the cellulose from the water phase so that at least 30% of the derivative contained by the water phase is allowed to be sorbed to the cellulose.

24. **(New)** A method according to claim 1, characterized in that the pH value of the pulp is more than 10.

25. **(New)** A method according to claim 1, characterized in that the pulp is mixed with the cellulose derivative for at least 10 minutes before drying.

26. **(New)** A method according to claim 1, characterized in that the pulp is mixed with the cellulose derivative for at least 20 minutes before drying.